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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/732,771	12/09/2003	John R. Bennett	1761	6950

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EXAMINER	
PHAM, HUNG Q	
ART UNIT	**PAPER NUMBER**
2168	

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/732,771	BENNETT ET AL.	
	Examiner	Art Unit	
	HUNG Q. PHAM	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *12-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/08/06 has been entered.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-11, drawn to a method for decompressing a trie by examining two nodes in the trie and determining whether a tag flag included in the first node and second node having a setting indicating whether a multiple tag field is attached to the first and second node, classified in class 707, subclass 101.

II. Claims 12-18, drawn to a system and program for handling the nodes in a trie and determining whether the nodes of the trie belong to various plural node categories, classified in class 707, subclass 2.

Newly submitted claims 12-18 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 12-18 drawn to a system and program for handling the nodes in a trie and determining whether the nodes of the trie belong to various plural node categories, classified in class 707, subclass 2, and Claims 1-11 drawn to a method for decompressing a trie by examining two nodes in the trie and determining whether a tag flag included in the first node and second node having a setting indicating

whether a multiple tag field is attached to the first and second node, classified in class 707, subclass 101.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 12-18 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

Applicant's arguments with respect to the rejection of claims 1-8 under 35 U.S.C. § 102 have been fully considered but they are not persuasive.

- As argued by applicants at page 7:

> *... A node's tag flag setting indicates whether the node has an attached multiple tag field. The tag flag in the cited prior has no such function; it does not indicate whether or not a multiple tag field is attached because in the Background art a multiple tag filed is always attached (see discussion below).*
>
> ...
>
> *... However, as stated in the Background, with such prior art tries, multi- tagging of nodes is "done by setting aside an additional bit in each node for each additional subset" (page 4, lines 21-24, emphasis added). Furthermore, the Background states that "reserving such tagging bits in each node reduces compression" (page 5, lines 1-2, emphasis added). The prior art cited by the rejection clearly teaches reserving multiple bits for each flag for all nodes of a trie. This causes bloat in the prior art trie because the trie has many additional bits even when they are not needed.*

Examiner respectfully disagrees. As disclosed in the Background, there is no need to reserve an additional bit in each node.

As taught in the Background, tagging is a helpful technique for marking certain words (Background, page 4, lines 10-12). Gender is associated with certain words, but not for all words (Background, page 4, lines 18-20). As further disclosed in the Background, a single bit is not sufficient to represent male, female and gender neutral. Therefore, an additional bit is

reserved for those categories, e.g., one bit for gender or not, and one bit for male or female (Background, page 4, lines 20-24). Thus, for a gender word node, that gender word node is marked by a tag or *tag flag*, e.g., 1. The tag flag of 1 indicates that gender word node has an additional bit as *a multiple tag field* with a setting that indicates *a tag*, e.g., 10 or 11. The setting tag is associated with a particular category corresponding to that setting, e.g., 10 for male, and 11 for female. For a non-gender word node, that non-gender word node is marked by another tag flag, e.g., 0. When the tag flag is 0, obviously, there is no need of an additional bit as suggested in the Background, `gender is associated with certain words, but not all words` (Background, page 4, lines 19-20), and `an additional bit in each node for each additional subset` (Background, page 4, lines 22-23). In different words, *the multiple tag field is not attached to the second node.*

- As argued by applicants at page 8:

  ... However, claim 1 clearly recites that the "multiple tag field... does not contain the tag flag". The "tag flag" in the Background is part of the prior art's multiple tag field and is therefore distinguishable from the tag flag of claim 1.

Examiner respectfully disagrees. As discussed above, a single bit is considered as a tag flag, and an additional bit for a gender word node is considered as a multi tag field. They are different in setting. The multi tag field does not contain the tag flag.

In view of the above, the examiner contends that all limitations as recited in the claims have been addressed in this Action.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11, especially claim 1, are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As in claim 1, the claimed limitation: ***determining that the second node includes a tag having a setting indicating that a multiple tag field is not attached to the second node*** is not a tangible result as set forth in MPEP 2106 (IV)(B)(2)(b)(ii)[1]. The result of determining is still unknown, and not being used for decompressing a trie as recited at line 2 of claim 1.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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[1] MPEP 2106 (IV)(B)(2)(b)(ii):

> For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *Alappat* 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O 'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See *AT &T*, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557 (*>- *en*< *banc*). For example, a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory.

Claims 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As in claim 1, the steps of ***determining that the first node includes a tag flag having a setting indicating that a multiple tag field, that does not contain the tag flag, is attached to the first node, and in response evaluating settings in the multiple tag field, and for each setting that indicates a tag, associating the first node with a category corresponding to that tag***, and ***determining that the second node includes a tag flag having a setting indicating that a multiple tag field is not attached to the second node*** were not described in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admission [BACKGROUND OF THE INVENTION, pages 1-4].

Regarding claims 1 and 11, as in the background of the application is a computer-implemented method and program for decompressing a trie (Background, page 1, line 22-page 2, Line 3) including:

evaluating a first node of the trie; determining that the first node includes a tag flag having a setting indicating that a multiple tag field, that does not contain the tag flag, is attached to the first node, and in response evaluating settings in the multiple tag field, and for each setting that indicates a tag, associating the first node with a category corresponding to that tag (As taught in the Background, tagging is a helpful technique for marking certain words (Background, page 4, lines 10-12). Gender is associated with certain words, but not for all words (Background, page 4, lines 18-20). As further disclosed in the Background, a single bit is not sufficient to represent male, female and gender neutral. Therefore, an additional bit is reserved for those categories, e.g., one bit for gender or not, and one bit for male or female (Background, page 4, lines 20-24). Thus, for decompressing a gender word node in the trie as *a first node of the trie*, that gender word node is *evaluated* and *determined* whether it is marked by a tag as *tag flag*, e.g., 1. The tag flag of 1 indicates that gender word node has an additional bit as *a multiple tag field* with a setting that indicates *a tag*, e.g., 10 or 11. The additional bit as *multiple tag field* does not contained the tag as *tag flag*. The setting tag is associated with a particular category corresponding to that setting, e.g., 10 for male, and 11 for female); and

evaluating a second node of the trie, and ***determining that the second node includes a tag flag having a setting indicating that a multiple tag field is not attached to the second node*** (For a non-gender word node as *a second node of the trie*, that non-gender word node is evaluated and determined whether it is marked by another tag flag, e.g., 0. If the tag flag is 0, obviously, there is no need of an additional bit as suggested in the Background, gender is associated with certain words, but not all words (Background, page 4, lines 19-20), and an additional bit in each node for each additional subset (Background, page 4, lines 22-23). In different words, *the multiple tag field is not attached to the second node*).

Regarding claim 9, as disclosed in the Background of The Invention, ***the node includes at least one partial enumeration count*** (page 4, lines 18-24).

Regarding claim 10, as disclosed in the Background of The Invention, ***the node includes a partial enumeration count for at least one of the tags*** (each word in the word list is tagged by a particular key, and each word is mapped to a global enumeration, page 3).

Claims 2-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admission [BACKGROUND OF THE INVENTION, pages 1-4] in view of Knuth [The Art of Computer Programming].

Regarding claim 2, the Background of The Invention does not have the step of ***evaluating a tag information field to determine that the trie was constructed to have at least one node with a multiple tag field***. Knuth teaches a method for decompressing a trie and further discloses the step of ***evaluating a tag information field to determine that the trie was constructed to have at least one node with a multiple tag field*** (as disclosed by Knuth at page 499, a Patricia trie consists of a header and N-1

nodes, where the nodes contain several fields. The header is represented by a plurality of particular bit long, where each bit long corresponding to a particular field, e.g., KEY, LLINK, and LTAG, and LTAG is one bit field that tells whether or not LLINK pointing to a particular node. Thus, to search for particular key words in Patricia trie, LTAG as ***tag information field*** is evaluated to determine whether ***a node with multiple tag fields*** exists or not). It would have been obvious for one of ordinary skill in the art at the time the invention was made to include the step of evaluating tag information as taught by Knuth into the decompressing method as disclosed in the background in order to search for a particular key word.

Regarding claim 3, the Background of The Invention does not have ***a bitmask, and wherein evaluating each setting in the multiple tag field comprises checking the value of each bit in the bitmask.*** Knuth teaches a method for decompressing a trie and further discloses ***a bitmask, and wherein evaluating each setting in the multiple tag field comprises checking the value of each bit in the bitmask*** (as disclosed at page 499, the fields LLINK, RLINK, LTAG, RTAG, SKIP are bitmasks and each bit of the field would be checked to search for a particular key word). It would have been obvious for one of ordinary skill in the art at the time the invention was made to include the step of checking the value of bitmask as taught by Knuth into the decompressing method as disclosed in the background in order to search for a particular key word.

Regarding claim 4, the Background of The Invention does not have the step of ***evaluating information in a header of the trie to determine a size of the bitmask.*** Knuth teaches a method for decompressing a trie and further discloses the step of ***evaluating information in a header of the trie to determine a size of the bitmask*** (the technique of searching THE with bit pattern 10111 01000 00101 at pages 499-500). It would have been obvious for one of ordinary skill in the art at the time the

invention was made to include the step of evaluating the header of the trie in order to search for a particular key word.

Regarding claim 5, the Background of The Invention does not have the step of ***checking a value field to determine which tags have values associated therewith***. Knuth teaches a method for decompressing a trie and further discloses the step of ***checking a value field to determine which tags have values associated therewith*** (the technique of searching THE with bit pattern 10111 01000 00101 at pages 499-500). It would have been obvious for one of ordinary skill in the art at the time the invention was made to include the step of checking a value field as taught by Knuth into the decompressing method as disclosed in the background in order to search for a particular key word.

Regarding claim 6, the Background of The Invention does not have the step of ***at least one of the tags has a value associated therewith, and checking a value size array field to determine a size for each value associated with a tag***. Knuth teaches a method for decompressing a trie and further discloses ***at least one of the tags has a value associated therewith, and checking a value size array field to determine a size for each value associated with a tag*** (the technique of searching THE with bit pattern 10111 01000 00101 at pages 499-500). It would have been obvious for one of ordinary skill in the art at the time the invention was made to include the step of checking a value size array as taught by Knuth into the decompressing method as disclosed in the background in order to search for a particular key word.

Regarding claim 7, the Background of The Invention does not have the step of ***checking a value size array field to determine which tags have values associated therewith***. Knuth teaches a method for decompressing a trie and further discloses the step of ***checking a value size array field to determine***

which tags have values associated therewith (the technique of searching THE with bit pattern 10111 01000 00101 at pages 499-500). It would have been obvious for one of ordinary skill in the art at the time the invention was made to include the step of checking a value size array as taught by Knuth into the decompressing method as disclosed in the background in order to search for a particular key word.

Regarding claim 8, Knuth further discloses the step of ***checking the value size array field to determine a size for each value associated with a tag*** (the technique of searching THE with bit pattern 10111 01000 00101 at pages 499-500).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q. PHAM whose telephone number is 571-272-4040. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIM T. VO can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HUNG Q PHAM
Examiner
Art Unit 2168

July 18, 2006